DETAILED ACTION

Response to Arguments

1. The applicant has amended claim 1 to include the claimed cover film and metal layer from original claims 10 and 11.

The amended claims are addressed in the rejection below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1-7, 21-22, and 26-28 rejected** under 35 U.S.C. 103(a) as being unpatentable over **Cadotte et al.** (U.S. Patent # 6,091,355) in view of **Hyltin** (U.S. Patent # 3,454,945).

Regarding claims 1, 3, and 26-28, Cadotte discloses a radar transceiver comprising all of the limitations of the instant invention, including the claimed oscillator (figures 4-5, column 6 line 29- column 7 line 6, etc.), the claimed mixer (figure 8, column 8 lines 40-47,etc.), and the claimed substrate (figure 1, claims 1-2, column 5 lines 14-51, etc.), except that the circuit components are at least partially integrated in one or more of the metallized *external* surfaces of the substrate (figure 1, column 5 lines 30-38, claims 1-2, etc). Cadotte further discloses the use of plated through vias integrated into the metallized *internal* surfaces to connect components of the top and bottom metallized surfaces (figures 1 and 3, column 5 lines 40-52, column 6 lines 1-17 and 50-64, claim 3, etc), but fails to disclose the integration of the circuit components themselves into the metallized internal surfaces.

Cadotte further discloses components that can be interpreted as the claimed cover film (figure 5: dielectric layers 16 and/or 17, column 6 lines 36-54, claim 6) and claimed metal layer (figure 5: faces of metal housing 18, column 6 lines 36-54, claim 6).

In the same field of endeavor, Hyltin discloses a radar transceiver wherein a passive circuit component of the mixer (figures 5-7, column 8 lines 19-52; and figure 12, column 11 lines 39-63) and the resonant circuit of the oscillator (figure 14, column 2 lines 64-70, column 12 lines 28-33 and 43-75) are at least partially integrated in the metallized *internal* surfaces of the substrate (see citations in this paragraph). It would have been obvious to modify Cadotte to do so, as taught by Hyltin, *in order to protect the electronic components from external elements, or to save space on the main circuit board by moving some components to another layer (column 1 lines 45-54), with predictable results.*

Hyltin also explicitly discloses the claimed cover film (figure 21: insulating film 428 and/or oxide film 420, column 15 lines 29-48, column 15 line 67- column 16 line 55) and claimed metal layer (figure 21: metal film 432 and/or strip conductors 422-424, column 15 lines 29-48, column 15 line 67- column 16 line 55). For further examples of electronic components with the claimed cover film and claimed metal layer, see figures 6-7, 12, and 15: insulating layers 233, 244, 258-259, etc and metal layers 220, 224, 245-246, 260, etc; column 8 lines 59-66, column 11 lines 10-16, column 11 lines 54-63, and column 12 line 45-column 13 line 2. It would have been obvious to modify Cadotte to include Hyltin's cover structures, as taught by Hyltin and commonly known in the art, in order to protect or shield the electronic components from external elements or to

provide electrical contact points that are insulated from other surface components (see citations), with predictable results.

Regarding claim 2, it is well known in the art to choose a voltage-controlled oscillator for an oscillator; it would have been obvious to do so in order to enable simple and adjustable control of the oscillation frequency, without any new or unexpected results.

Regarding claim 4, Hyltin further discloses the use of a varactor diode for frequency tuning (figures 4 and 13-14: 160, column 2 lines 64-70, column 12 lines 28-33). It would have been obvious to modify Cadotte do so, as taught by Hyltin and commonly known in the art, in order to enable simple and adjustable control of the tuned frequency, without any new or unexpected results.

Regarding claim 5, Hyltin further discloses the use of a hybrid ring for a mixer (figure 5, column 8 lines 19-50). It would have been obvious to modify Cadotte do so, as taught by Hyltin and commonly known in the art, in order to implement a relatively simple mixer on an integrated circuit, without any new or unexpected results.

Regarding claims 6-7, it is well known in the art to use a frequency divider at the output of an oscillator; it would have been obvious to do so in order to downconvert the oscillator output into an appropriate frequency range for transmission, reception, or

input into any circuit component with a limited operating range of frequencies, without any new or unexpected results.

Regarding claim 21, Hyltin discloses frequency modulating of the radar signal via frequency/amplitude keying of an oscillator, an amplifier, or a very high frequency switch (figure 4, column 5 lines 50-59, figure 25 and corresponding text). It would have been obvious to modify Cadotte to do so, as taught by Hyltin and commonly known in the art, in order to benefit from pulse compression (column 5 lines 50-59), without new or unexpected results.

Regarding claim 22, it is well known in the art to amplitude modulate a radar signal via frequency/amplitude keying of an oscillator, an amplifier, or a very high frequency switch; it would have been obvious to do so in order to enable continuous transmission, reception, and analysis of the radar signals, without any new or unexpected results.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelley Chen whose telephone number is (571) 270-1330. The examiner can normally be reached Mondays through Fridays, between 10:00 AM and 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached at (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shelley Chen/

Patent Examiner

Art Unit 3661

June 3, 2008

/Thomas G. Black/

Supervisory Patent Examiner, Art Unit 3661